Arizona Department of Health Services

Clinician Fact Sheet

Methicillin Resistant Staphylococcus aureus (MRSA)

Epidemiology

- Methicillin-resistant *S. aureus* (MRSA) is a type of *S. aureus* that is resistant to antibiotics called beta-lactams. Beta-lactam antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin, amoxicillin, and cephalosporins.
- 25% to 30% of the population is colonized with *S. aureus* and approximately 1% is colonized with MRSA.
- MRSA infections occur most frequently among persons in hospitals and healthcare facilities (such as nursing homes and dialysis centers), or those who who have had exposure to such facilities. These are referred to as healthcare-associated MRSA (HA-MRSA) infections.
- MRSA skin infections, which typically occur in healthy individuals without exposure to healthcare are referred to as community-associated MRSA (CA-MRSA).
- Persons with MRSA infections that meet all of the following criteria likely have CA-MRSA infections:
  - Diagnosis of MRSA was made in the outpatient setting or by a culture positive for MRSA within 48 hours after admission to the hospital.
  - No medical history of MRSA infection or colonization.
  - No medical history in the past year of:
    - Hospitalization
    - Admission to a nursing home, skilled nursing facility, or hospice
    - Dialysis
    - Surgery
  - No permanent indwelling catheters or medical devices that pass through the skin into the body.

Clinical Presentation

- CA-MRSA most often presents as skin or soft tissue infection such as a boil or abscess. Patients frequently recall a “spider bite”. The involved site is red, swollen, and painful and may have pus or other drainage.
- MRSA can also cause more serious infections, such as blood stream infections or pneumonia, leading to symptoms of shortness of breath, fever, chills and signs of sepsis.

Differential Diagnosis

- MRSA skin infections can be confused with streptococcal infections.
- Other types of MRSA infections, such as pneumonia, bloodstream or urinary tract infections can only be distinguished by culture (see below)

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Laboratory

- A culture should be obtained from the infection site and sent to the microbiology laboratory. If S. *aureus* is isolated, the organism should be tested as follows to determine which antibiotics will be effective for treating the infection.
    - **Skin Infection:** Obtain either a small biopsy of skin or drainage from the infected site. A culture of a skin lesion is especially useful in recurrent or persistent cases of skin infection, in cases of antibiotic failure, and in cases that present with advanced or aggressive infections.
    - **Pneumonia:** Obtain a sputum culture (expectorated purulent sputum, respiratory lavage, or bronchoscopy).
    - **Bloodstream Infection:** Obtain blood cultures using aseptic techniques.
    - **Urinary Infection:** Obtain urine cultures using aseptic techniques.

Infection Control of CA-MRSA

- The main mode of transmission of *S. aureus* and/or MRSA is via hands which may become contaminated by contact with a) colonized or infected individuals, b) colonized or infected body sites of other persons, or c) devices, items, or environmental surfaces contaminated with body fluids containing *S. aureus* or MRSA. Other factors contributing to transmission include skin-to-skin contact, crowded conditions, and poor hygiene.
- To prevent transmission of CA-MRSA, instruct patient to practice good hygiene:
    - Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
    - Keep cuts and scrapes covered with a clean, dry bandage until healed.
    - Avoid contact with other people's wounds or bandages.
    - Avoid sharing personal items such as towels or razors.

Treatment

- MRSA skin infections, such as boils or abscesses, may be treated by incision and drainage, depending on severity. Antibiotic treatment, if indicated, should be guided by the susceptibility profile of the organism. Oral antibiotics that may be effective against MRSA:
    - Trimethoprim-sulfamethoxazole (avoid in pregnancy)
    - Clindamycin (look at D-test for resistance)
    - Doxycycline (avoid in pregnancy)
- Treatment with intravenous antibiotics, such as vancomyin, should be considered for more serious MRSA infections.

For More Information

- ADHS website at http://www.azdhs.gov/phs/oids/epi/disease/mrsa/mrsa_g.htm
- Centers for Disease Control and Prevention website at http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html